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## Don't Be So Square

Why American drivers should learn to love the roundabout.

By Tom Vanderbilt

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Here is a narrative that has been playing out over the last several years in any number of American towns: Traffic engineers notice that a particular intersection has a crash problem or is moving traffic inefficiently. After a period of study, the engineers propose a roundabout. The engineers, armed with drawings and PowerPoint slides, visit a community meeting. They try to explain the benefits of their proposed design in clear language, though they may occasionally drop phrases like *entry path overlap* or *inscribed circle diameter*. Townspeople raise concerns. Roundabouts are not safe, they say. They are confusing. They are bad for pedestrians. They will hurt local businesses. They are more expensive than traditional solutions. The local newspaper reports this, adding some man-in-the-street comments from "area drivers," who profess not to like roundabouts, even making dark references to "circles of death." Then, the roundabout is built, the safety record improves, traffic congestion doesn't seem any worse than before, and the complaints begin to fade faster than white thermoplastic lane markings in the heat of summer.

According to best estimates, the United States is now home to about 2,000 "modern roundabouts"—more on that phrase in a

moment—most of which were built in the last decade. As engineer Ken Sides noted in the *ITE Journal*, however, in 2008 Australia built its 8,000th roundabout; by Sides' calculation, the United States would need to build roughly 148,519 *more* roundabouts to match the Australian rate per capita. Interestingly, Australia—a country whose traffic landscape is rather similar to ours—has, since 1980, cut its traffic-fatality rate to nearly half the U.S. figure. The rise of roundabouts has no doubt played some part.

Why are Americans so suspicious of roundabouts? The simplest answer is that we have grown used to (and feel comfortable with) binary, on-off traffic control. We suspect such signals are more efficient than the "fuzzy logic" that seems to govern roundabouts. Roundabouts require drivers to make their own decisions and assess others'

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The advertisement is for Dish Network. It features a central image of an NFL player in a blue and white uniform, holding a football. The text on the ad includes: "dish NETWORK Authorized Reseller", "OUR BEST DEAL EVER! \$19.99/MO. FOR 12 MONTHS w/ commitment", "RedZone", and "FREE QUOTE SatelliteTVValue.com". There are also logos for "American Satellite" and "NFL".

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actions, rather than relying on third-party signals.

But psychology offers a few interesting clues as well. Mentioning roundabouts seems to invoke some form of the famous "availability bias," which leads people make judgments based on the memories that can be brought most easily to mind. And so, the American who may have driven as a tourist in France or Greece a number of years back will shudder with recognition, associating the roundabout with terror and near misses. But motorists with such memories often fail to consider that they were driving as tourists in unfamiliar climes, perhaps only for a few days. Roundabouts, like the language, the signage, the food, and just about everything else, were strange and novel, and so the tourist driver, already probably feeling a bit wiggled out—for a roundabout in Italy is filled with Italian drivers—felt a heightened level of stress and thereafter consigned the roundabout to the dustbin of terrible ideas—or things that might be good for Europe (like socialized medicine) but don't translate.

Another problem is that the word *roundabout* brings up for many people an image of an old "traffic circle" or, in the Northeast, a "rotary" intersection. But these are not necessarily roundabouts, just as the Arc de Triomphe is not a roundabout, nor is New York City's Columbus Circle (which, for the record, is acknowledged as the world's first "rotary system" intersection).

The two are fundamentally different beasts. You are in a modern roundabout if it is the entering driver who must yield to traffic already circling. You are *not* in a modern roundabout if you are expected to yield to entering drivers or if you encounter traffic lights or stop signs. Size is another easy distinguishing mark. The old traffic circles were huge, and actually required drivers to make fairly significant detours around a vast central area—typically just an expanse of desultorily tended grass. Roundabouts are typically half the size; some, like one in Kingston, N.Y., were built inside the infields of existing traffic circles. Rather than simple lawns, their centers may contain statues, beds of flowers, or any number of visual elements. Velocity is another telltale identification mark. The older traffic circles are often marked by high "entry speeds"—drivers come blazing in on long arcing curves and must then merge, highway-style. In the tighter spaces of the modern roundabout, the entrances and exits are

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The advertisement is a promotional graphic for Dish Network. It features a central image of an NFL player in a blue and white uniform, holding a football. The player is wearing a helmet and has the number 16 on his jersey. The background is dark with some light effects. Text elements include: 'dish NETWORK Authorized Retailer' in the top left; 'OUR BEST DEAL EVER!' in large yellow letters; '\$19.99/MO.' in large white letters; 'FOR 12 MONTHS w/ commitment' in smaller white letters; 'RED ZONE' in red and white; and a red button with white text that says 'FREE QUOTE SatelliteTVValue.com'. There are also NFL logos and 'American Satellite' branding at the bottom.

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"flared" with "splitter islands" that "deflect" incoming traffic.

This confusion is likely to last as long as these older circles are still in the landscape. But as modern roundabouts begin to appear with increasing frequency, here are a few reasons to be cheerful, which I have arranged in the easy-to-remember acronym STEP:

**Safety.** Intersections are perhaps the single most dangerous environment in traffic. According to the Federal Highway Administration, more than one-fifth of all traffic fatalities happen at intersections. If you think the problem is a lack of signals, think again. Reports FHWA: "Only 10% of all intersections are signalized, but nearly 30% (2,744) of intersection fatalities occurred at signalized intersections."

Roundabouts are safer than traditional intersections for a simple reason: By dint of geometry and traffic rules, they reduce the number of places where one vehicle can strike another by a factor of four. They also eliminate the left turn against oncoming traffic—itsself one of the main reasons for intersection danger—as well as the prospect of vehicles running a red light or speeding up as they approach an intersection to "beat the light." The fact that roundabouts may "feel" more dangerous to the average driver is a good thing: It increases vigilance. It's unlikely the average driver killed or severely

injured in a high-speed "T-bone" crash as they drove through a green light felt much risk. In addition, drivers must slow to enter a roundabout: Placing an obstacle in the center makes this not only a physical necessity but visually disrupts the speed-encouraging continuity of the street. Motorists also travel through a roundabout more slowly than they would a traditional intersection: Roundabouts are typically built using what's called "negative superelevation," meaning that water flows away from the center and also that the road slopes *against* the direction of a driver's turn. As a result, any crashes in a roundabout take place at lower speeds and are thus less likely to be fatal. While roundabouts *can* be more costly to install than other kinds of traffic controls, such calculations don't take into account the fact that reducing fatal crashes also reduces social and monetary costs.

**Time.** People may see vehicles winding

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The advertisement is a dark-themed graphic. At the top left is the Dish Network logo with 'Authorized Retailer' below it. In the center is a photograph of an NFL player in a blue and white uniform, wearing a helmet and holding a football. To the right of the player, the text reads: 'OUR BEST DEAL EVER!' in large yellow letters, followed by '\$19.99/MO.' in white, and 'FOR 12 MONTHS w/ commitment' in yellow. Below this is the 'RED ZONE' logo. At the bottom right is a red button with white text that says 'FREE QUOTE' and 'SatelliteTVValue.com'. The bottom left corner has the 'American Satellite' logo and 'NFL' text.

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slowly through a roundabout and think the intersection must be 1) adding to congestion and 2) slowing down people's travel times. But travel speed at *any given moment* should not be confused with overall travel time. Drivers may breeze through one intersection's green lights only to sit through a 90-second cycle at the next. What's more, the "protected turning movements"—i.e., the green arrows—required at many intersections steal time from the larger numbers of people wanting to proceed in every other direction. Roundabouts slow but rarely stop traffic. A noteworthy example here is Golden, Colo., which in 1999 converted a series of four formerly signalized intersections to roundabouts on a wide section of arterial highway that was becoming a major corridor for "big box" retail. While speeds between the intersections fell to an average of 37 mph from 47 mph, the time to travel the entire stretch of road *dropped*.

**Energy.** Accelerating from a dead stop is the least efficient thing a car's engine can do. By reducing stop-start queuing—and eliminating it at "off-peak times," like the moments at 2 a.m. when you're idling at a red-light at an near-empty intersection—roundabouts not only waste less time than traditional intersections but also less energy, as various studies have confirmed.

**Public space.** The left-turn lanes mentioned above not only waste time, they

waste space. They're merely a temporary parking lot for vehicles that could otherwise be moving. By removing the need for these lanes in every direction, roundabouts can consume less asphalt. (Having to cross fewer lanes is also safer for pedestrians.) Rather than serving as shrines to the paving industry, the centers of intersections can contribute to the overall aesthetic improvement of a neighborhood, while the slower approach and travel speeds (which also mean less noise) are a boon to any sort of street or neighborhood life outside the car.

There are few silver bullets when it comes to traffic, and roundabouts will not work everywhere. (Some intersections are already too busy to consider switching to the roundabout model.) Like anything, they can be poorly designed: You don't want them to look as if someone simply traced "a circle around a coffee can" on a piece of paper, as one engineer has put it. Bad driving

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behavior can cause them to "lock up" (just as one driver "blocking the box" can freeze a four-way intersection). Yes, there will perhaps have to be some minor educational outreach—one Indiana town is weighing spending \$24,000 to do just that—but a larger question here is whether people who cannot manage to merge at low speed into a counter-clockwise circle and, yes, perhaps even *change lanes in that circle*, before finding the correct exit should actually be holding licenses that enable them to operate heavy machinery in the first place.

Luckily, though, there are signs that our national roundabout aversion may not last forever. In places like Clearwater Beach, Fla., residents have actually petitioned for roundabouts to be installed, even holding a party on opening day. When's the last time that happened for a traffic signal?

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The advertisement is a rectangular graphic with a dark background. On the left, there is a photograph of a football player in a blue and white uniform, wearing a helmet and holding a football. Above the player is the NFL logo. In the top left corner, the Dish Network logo is displayed with the text "Authorized Retailer" below it. In the top right corner, the text "OUR BEST DEAL EVER!" is written in large, bold, yellow letters. Below this, the price "\$19.99/MO." is shown in large white letters, followed by "FOR 12 MONTHS w/ commitment" in smaller white text. In the bottom right corner, there is a red button with the text "FREE QUOTE" and "SatelliteTVValue.com" in white. At the bottom left, the "American Satellite" logo is visible. The NFL logo is also present at the bottom right of the player's image.

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